CLAIMS

1. A highly pure ultra-fine SiOx powder, which is represented by the formula SiOx wherein x is from 0.6 to 1.8, which has a specific surface area of at least 10 m^2/g, and which has a total content of Na, Fe, Al and Cl of at most 10 ppm.

2. The SiOx powder according to Claim 1, which is represented by the formula SiOx wherein x is from 0.9 to 1.6.

3. The SiOx powder according to Claim 1 or 2, wherein the specific surface area is at least 50 m^2/g and the total content of Na, Fe, Al and Cl is at most 5 ppm.

4. A method for producing the highly pure ultra-fine SiOx powder as defined in any one of Claims 1 to 3, which comprises reacting a monosilane gas with a gas capable of oxidizing the monosilane gas in a non-oxidizing gas atmosphere under a pressure of from 10 to 1000 kPa at a temperature of from 500 to 1000°C.

5. The production method according to Claim 4, wherein the amount of the non-oxidizing gas is at least double the total amount of the monosilane gas and oxygen participating in the oxidation of the gas capable of oxidizing the monosilane gas by molar ratio.

6. The production method according to Claim 4 or 5, wherein the gas capable of oxidizing the monosilane gas is oxygen, air, NO_2, CO_2 or H_2O.

7. The production method according to Claim 4, 5 or 6,

wherein the non-oxidizing gas is argon or helium.

8. The production method according to any one of Claims 4 to 7, wherein the reaction is carried out in a non-oxidizing gas atmosphere under a pressure of from 50 to 300 kPa at a temperature of from 500 to 1000°C.

9. An interlayer dielectric film of a semiconductor device, a gas barrier film of a solar battery, a gas barrier film of a food packaging film or a protective film of an optical component, which is formed from the SiOx powder as defined in any one of Claims 1 to 3.